

3270 COAX ADAPTER

INSTALLATION AND USER'S MANUAL

Copyright (c) 1987 by Attachmate Corporation, Bellevue, WA

Manual #999-00339

Printed in U.S.A.

FCC PART 15 RADIO FREQUENCY INTERFERENCE STATEMENT

WARNING: The equipment described herein generates, uses, and can radiate radio frequency energy and, if not installed in accordance with the instructions herein, may cause interference to radio communications. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

ATTACHMATE HARDWARE WARRANTY AGREEMENT

1. **HARDWARE AND SOFTWARE:** This Package of Hardware sold to you and Software licensed to you is distributed to you under the terms and conditions of this Agreement. The Hardware, Software and Documentation involve valuable patent, copyright, trade secret, trademark, mask work, and other proprietary rights. The Software and Documentation are copyrighted, and ownership and title are retained by Attachmate. You may not reverse engineer, decompile or create any derivative work based on the Hardware or Software.

2. **LIMITED WARRANTY:** Attachmate warrants for a period of one year from the date of delivery by Attachmate that (a) the Hardware will be free from defects in materials and workmanship and (b) Hardware or Software will perform substantially in accordance with the specifications published by Attachmate. Defective Hardware or Software under this warranty will be modified or replaced when returned to Attachmate with a copy of your paid invoice unless the failure was a result of misapplication, abuse or accident. **ATTACHMATE'S LIABILITY (WHETHER IN TORT, CONTRACT OR OTHERWISE) WILL IN NO EVENT EXCEED THE PURCHASE PRICE OF THE HARDWARE OR SOFTWARE.**

EXCEPT AS DESCRIBED ABOVE, THE SOFTWARE IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE RESULTS AND PERFORMANCE OF THE SOFTWARE IS ASSUMED BY YOU. SHOULD THE SOFTWARE PROVE DEFECTIVE, YOU (AND NOT ATTACHMATE OR ITS DEALERS) ASSUME THE ENTIRE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. NEITHER ATTACHMATE NOR ANYONE ELSE WHO HAS BEEN INVOLVED IN THE CREATION, PRODUCTION OR DELIVERY OF THIS PRODUCT SHALL BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE SOFTWARE EVEN IF ATTACHMATE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR CLAIM. SOME STATES DO NOT ALLOW THE EXCLUSION OF LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

3. **GENERAL:** This Agreement shall be governed by the laws of the State of Washington and shall inure to the benefit of Attachmate Corporation, its successors and assigns. If you have any questions concerning this Agreement, please contact in writing Attachmate Corporation, Customer Service, 3241 - 118th SE, Bellevue, Washington 98005.

1st Edition: May 1987

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION THAT IS PROTECTED BY COPYRIGHT. ALL RIGHTS ARE RESERVED. NO PART OF THIS DOCUMENT MAY BE PHOTOCOPIED, REPRODUCED OR TRANSLATED TO ANY OTHER LANGUAGE WITHOUT THE PRIOR WRITTEN CONSENT OF ATTACHMATE.

IRMA is a registered trademark of Digital Communications Associates, Inc.

IBM is a registered trademark of International Business Machines Corporation.

MS-DOS is a registered trademark of Microsoft Corporation.

AT&T is a registered trademark of American Telephone and Telegraph Company.

PS/2 is a registered trademark of International Business Machines Corporation.

PREFACE

3270 Coax Adapter User's Manual

The *3270 Coax Adapter User's Manual* provides procedures and information you'll need for installing and using the 3270 Coax Adapter.

To make best use of the *User's Manual*, you should be familiar with the operation of the IBM Personal Computer (or compatible) and its Disk Operating System (DOS), as well as operations of IBM 3270 terminals and printers. A list of reference guides is provided at the end of this Preface.

The *3270 Coax Adapter User's Manual* consists of the following sections:

- Section 1, "Introduction," provides an overview of the 3270 Coax Adapter's capabilities and architecture.
- Section 2, "Installation and Safety," provides step-by-step installation procedures and safety precautions.
- Section 3, "Diagnostic Tests," provides step-by-step operating instructions on how to use the Diagnostic Test.
- Section 4, "3270 Control Unit Tests," provides instructions on how to use the 3270 Control Unit test facilities.
- Appendix A, "Troubleshooting," provides information to help you resolve any problems associated with the 3270 Coax Adapter.

- Appendix B, "I/O and Memory Addresses," describes the I/O and memory addresses used and how they are selectively enabled and disabled.
- Appendix C, "3270 Coax Adapter Specifications," lists detailed specifications for the 3270 Coax Adapter.

Reference Sources

The following is a list of reference sources which may help you to learn more about the operation of your personal computer and host communication peripherals:

- *IBM 3270 Information Display System 3274 Control Unit Description and Programmer's Guide*, IBM Publication GA 23-0061.
- *IBM 3270-Information Display System Data Stream Programmer's Reference*, IBM Publication GA23-0059.
- *3278 Display Station Operator's Guide*, IBM Publication GA 27-2890.
- *IBM 3287 Printer Operator's Guide*, IBM Publication GA 27-3230-1.
- *IBM PC Guide to Operations*, IBM Publication 6025000.
- *DOS 2.1 Disk Operating System Manual*, IBM Publication 6024120.
- *DOS 3.1 Disk Operating System Manual*, IBM Publication 6138519.
- *IBM PC Technical Reference Manual*, IBM Publication 6025005.

TABLE OF CONTENTS

SECTION 1 - INTRODUCTION

3270 Coax Adapter Overview	1-1
Supporting Software	1-2
Other Supporting Software	1-2
PC Compatibility	1-3
Architecture Overview	1-3

SECTION 2 - 3270 COAX ADAPTER INSTALLATION

Circuit Card Installation	2-1
Post Installation Considerations	2-2

SECTION 3 - DIAGNOSTIC TESTS

Introduction	3-1
Stand-Alone Mode (No Coax Connected)	3-1
On-Line Mode (Coax Connected)	3-2
Problem Determination	3-3

SECTION 4 - 3270 CONTROL UNIT TESTS

Introduction	4-1
Types of 3270 Coax Ports	4-1
Control Unit Tests	4-2
"/0" Test - Field and Data Test	4-2
"/3" Test - Device Status Table	4-2
"/4" Test - Reset Device Status Table	4-4
"b" Test - Control Unit Logical Configuration	4-4

APPENDIX A - TROUBLESHOOTING

Introduction	A-1
PC Will Not Boot DOS and/or Power Up	A-1
Test Diagnostic Program Fails	A-1
Terminal and/or PC Does Not Operate	A-5
Other Problems	A-5

APPENDIX B - I/O AND MEMORY ADDRESSES

Introduction	B-1
DCA-IRMA I/O Address	B-1
IBM 3278/79 Emulation Adapter Selective Address Enabling	B-1
Jumper Block E5 - I/O Addresses	B-2
Both Enabled (Labeled X)	B-2
IRMA Only (Labeled R)	B-2
IBM Only (Labeled B)	B-3
Jumper Block E6 - Memory Addresses	B-3
IBM Memory Enabled (Both Enabled)	B-3
IBM Memory Disabled (IRMA Only)	B-3

APPENDIX C - 3270 COAX ADAPTER SPECIFICATIONS

Physical Specifications	C-1
PC I/O Channel Specifications	C-1
Electrical Specifications	C-2
Environmental Specifications	C-3

SECTION 1

INTRODUCTION

3270 Coax Adapter Overview

The 3270 Coax Adapter offers increased flexibility, since it can operate as the following PC-to-mainframe adapters:

- IBM 3278/79 Emulation Adapter
- DCA-IRMA 3278/9 Emulation Board

Its ability to emulate these popular PC-to-Mainframe adapters means your PC can operate with any available PC-to-Mainframe software or terminal emulators. Either now or in the future.

The 3270 Coax Adapter fully supports and controls the IBM 3270 Type-2 coax communications protocol and 3270 data stream commands between an IBM Personal Computer or compatible, and an IBM 3270 Control Unit. Support for the following is included:

- 3278/79 Display Terminals - Models 2, 3, 4 and 5
- 3287 Printers - Models 1 and 2
- Single session CUT Mode - (Control Unit Terminal)
- Multi-Session DFT Mode - (Distributed Function Terminal)
- Large Screens - (80 X 32), (80 X 43) and (132 X 27)
- Extended Attributes - Highlighting, Reverse Image, 7 Colors
- Extended Data Streams - IBM File Transfer and Program Symbols
- National Adaptation - foreign language

Supporting Software

The 3270 Coax Adapter is best complemented by *EXTRA!* Connectivity Software. The *EXTRA!* Software provides a full range of capabilities, including: Basic 3270 Terminal and Printer Emulation, IBM 3270-PC compatible File Transfer, and full 3270-PC Emulation functions.

EXTRA! Connectivity Software can be customized to your specific environment and needs. It can turn your PC into a simple 3270 terminal or a full function 3270-PC with multiple host sessions and windows.

Other Supporting Software

With the 3270 Coax Adapter's ability to emulate the most popular PC-to-Mainframe adapters, a wide variety of PC-to-Mainframe software is immediately supported by your PC. The following lists just a few of the software programs available for each of the emulated adapters.

DCA-IRMA 3278/9 Emulation Board

<i>EXTRA!</i> Connectivity Software	by	Attachmate
E78-Terminal Program	by	DCA/IRMA
PC-Focus	by	Information Builders
Goldengate	by	Cullinet
Interactive PC link	by	McCormack & Dodge
Tempus Link	by	Micro Tempus
Your Programs	by	In-house

IBM 3278/79 Emulation Adapter

EXTRA! Connectivity

Software	by	Attachmate
3278/79 Emulation	by	IBM
PC 3270 Emulation	by	IBM
Attachment-370	by	IBM
PROFS/PC	by	IBM
VM Bond	by	IBM
TSO PC-Server	by	IBM
Your Programs	by	In-house

PC Compatibility

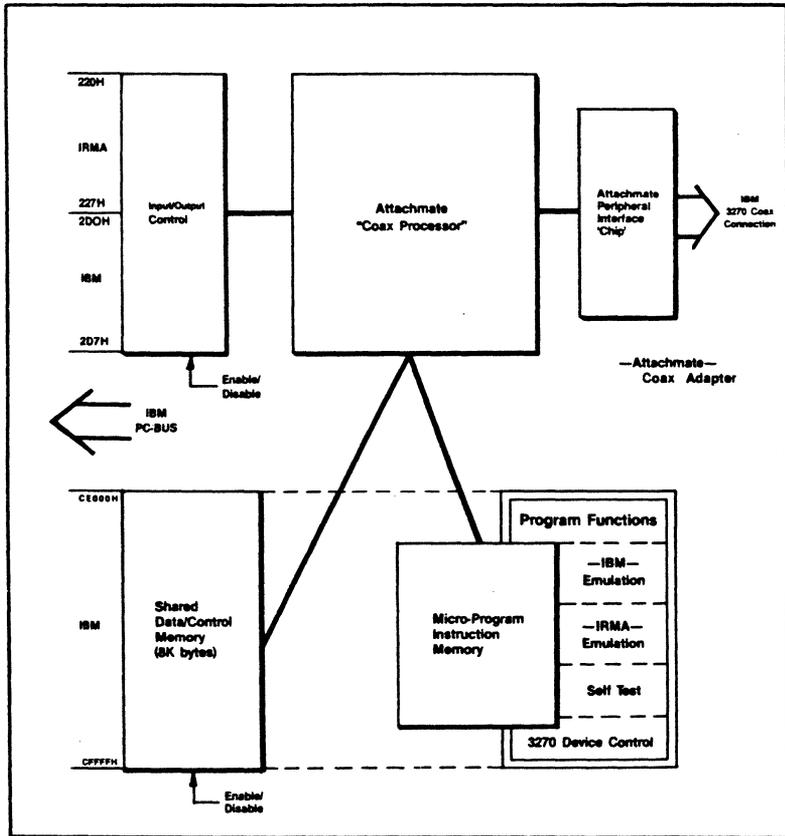
The 3270 Coax Adapter is fully compatible with the PC I/O addresses used by the DCA-IRMA Board. It emulates the commands and status functions of the DCA-IRMA Adapter when communicating with the PC and the 3270 Control Unit. Likewise, the 3270 Coax Adapter emulates the PC I/O addresses and the memory addresses of the IBM 3278/79 Emulation Adapter.

No downloading is required since the 3270 Coax Adapter utilizes resident firmware. There are no switches to set. Just install the 3270 Coax Adapter in your PC and start the software of your choice. Note that the 3270 Coax Adapter is compatible with the IBM PC, XT, or AT and other compatible PC's, including the Personal System/2 Model 30.

Architecture Overview

The 3270 Coax Adapter is a single circuit card designed to operate in an I/O bus expansion slot of an IBM PC/XT/AT Personal System/2 Model 30 or compatible. It communicates with the PC through both the I/O channel and shared memory. Figure 1-1 on the following page shows the five functional areas of the 3270 Coax Adapter: **I/O Control, Shared Memory, Coax Processor, Micro-Code Instruction Memory and Coax Peripheral Interface.**

Figure: 1-1



SECTION 2

3270 COAX ADAPTER INSTALLATION

Circuit Card Installation

To install the 3270 Coax Adapter into your PC, follow the steps listed in this section.

Installation Procedure:

1. **TURN OFF THE POWER TO THE PC, AND DISCONNECT THE SYSTEM POWER CORD. THERE MAY BE HAZARDOUS VOLTAGES NEAR THE POWER SUPPLY.**
2. Remove the cover from your PC System Unit. Consult your PC system's user manual for the instructions and safety considerations before installing an adapter board into an I/O expansion slot.
3. In your PC I/O expansion area, locate a vacant adapter slot. If there are several unused slots, select the one that will distribute heat most evenly throughout the chassis. Remove the selected adapter slot's screw and cover plate.
4. If your selected expansion slot lacks a plastic card guide, snap-in the plastic card guide provided into the proper holes located on the system unit housing. The system unit housing is located at the opposite end of the slot from the cover plate.
5. Remove the 3270 Coax Adapter from its box and protective bag. To avoid electrostatic damage to the circuits, avoid touching components or the back of the board.

6. To install the 3270 Coax Adapter board in your PC, slide it into position by first routing the coax connector through the slot in the option panel (normally at the rear of the computer system). Firmly seat the 3270 Coax Adapter in the expansion bus connector located at the bottom of the slot. If difficulties are encountered, ensure that the bottom edge of the bracket is aligned with the hole provided in the system chassis. Install the mounting bracket screw to provide a solid ground connection and to anchor the board.
7. Replace your system unit cover. Follow the instructions for your specific computer, as noted in your user manual. **TO MAINTAIN MAXIMUM SAFETY, COMPLETELY REASSEMBLE THE CABINET BEFORE APPLYING POWER.**
8. To assure that the 3270 Coax Adapter is completely functional, follow the diagnostic test procedures outlined in Section 3.

POST INSTALLATION CONSIDERATIONS

- a. The manufacturer complies with the 3270 standard specifications allowing up to 5000 feet of type RG-62AU coaxial cable terminated with a standard BNC type connector. Up to 1000 feet of twisted pair cable with suitable matching baluns is also acceptable. Other types of coax or cabling systems may not be compatible with the 3270 Coax Adapter. Plug the cable into the connector protruding from the option panel of the PC system.
- b. Complete diagnostics have been included with the 3270 Coax Adapter. This software should be backed up onto a working copy and stored along with your application media.

- c. If you are using *EXTRA!* or *EXTRA! Entry-Level*, refer to your *3270-PC Emulation Program User's Guide* for installation procedures for the included Operational Software. For other software, refer to the appropriate user guide for specific instructions.

- d. The 3270 Coax Adapter responds to I/O address 220H-227H (IRMA), 2D0H-2D7H (reserved for the IBM 3278/79 Adapter), memory addresses CE000H - CEFFFH (reserved for the IBM 3278/79 Adapter) and Interrupt Level 2 - IRQ2 (reserved for the IBM 3278/79 Adapter). Note that Interrupt Level 2 is only used with software which utilizes the IBM address ranges. If you have other adapters in your PC that also respond to these address ranges, a conflict may occur. This is an unusual situation, but should it occur, refer to "Troubleshooting," Appendix A.

SECTION 3

DIAGNOSTIC TESTS

Introduction

The 3270 Coax Adapter Diagnostic Test Program is provided on the supplied 3270 Coax Adapter Diagnostic Test Program diskette. The test program is used to verify that the 3270 Coax Adapter is operating properly immediately after installation and also serves as a useful troubleshooting tool for any later problems. The program performs comprehensive tests on all of the major functional areas of the 3270 Coax Adapter.

The diagnostic test has a Stand-Alone mode and an On-Line mode. Stand-Alone mode is recommended when bringing up the system for the first time. This mode requires no active cable connection to a 3270 Control Unit port. On-Line mode is useful for verifying active coax connection to a 3270 control unit. Both modes are described in greater detail in this section.

Stand-Alone Mode (No Coax Connected)

1. Review the installation instructions carefully in Section 2 to insure that the 3270 Coax Adapter is correctly installed.
2. If a coax cable from the 3270 Control Unit is connected to the 3270 Coax Adapter, it should be temporarily disconnected for this Stand-Alone test.
3. To start the Diagnostic Test Program, first boot your PC-system with DOS (consult your PC user guide if necessary), and place the supplied Diagnostic Test diskette into the default drive. Then type: **TEST <Enter>**

The test program will immediately prompt you if the coax cable from the 3270 Control Unit is connected. If it is, disconnect it for the Stand-Alone test and enter an "N" in response to the question.

4. The test program will then prompt you with the option to run the individual tests only once, or to run them continuously. Normally, a single pass is sufficient to expose any problem areas. Occasionally, however, an intermittent problem may develop where one pass through the individual tests is insufficient to catch the problem. To test a new board after installation, select the single pass option to begin the diagnostic test.

A diagnostic test will be performed on each section of the 3270 Coax Adapter. As each test is successfully completed, a "PASSED" message is displayed. If a problem area is detected, a "FAILED" or "WARNING" message is displayed and further testing may be discontinued.

Upon successful completion of the individual tests, the test program displays a message indicating that the 3270 Coax Adapter has successfully passed all the tests. If the test is unsuccessful, refer to Problem Determination on the following page.

On-Line Mode (Coax Connected)

For a more complete test, or if you need to verify the coax connection to the control unit, you can run the test in On-Line mode. To select On-Line mode, connect an active coax cable from the 3270 Control Unit and start the test again. This is done in the same manner as the Stand-Alone test - with one exception: Enter a "Y" when the test program prompts whether the coax cable from the 3270 Control Unit is connected.

In this mode, the port number and type of control unit connected to the 3270 Coax Adapter is displayed. A portion of the error log is also displayed when connected to an IBM 3274 Control Unit. This information can be useful for trouble shooting purposes.

Problem Determination

The test program uses individual tests to verify all areas of the 3270 Coax Adapter. Should a failure in a specific area be encountered, the test program will suggest the probable cause. Failures, in general, are usually due to incorrect installation of the 3270 Coax Adapter or an improper coax connection to the 3270 Control Unit. Check the areas indicated by the test message. If the problem persists, consult Appendix A for more information on troubleshooting.

If a failure message appears, but no probable cause is suggested, there may be a 3270 Coax Adapter hardware problem, or it may be an indication of an I/O or memory addressing conflict with your PC system. If you suspect an I/O or memory addressing conflict, remove the suspected conflicting device from your PC and re-run the test. If the test passes successfully, check Appendix B for information on how to configure the 3270 Coax Adapter to eliminate the conflict.

SECTION 4

3270 CONTROL UNIT TESTS

Introduction

The 3270 Coax Adapter is designed to be connected to an IBM 3270 Control Unit. Most of these control units provide device testing and status capability that can be initiated by a terminal operator. This section briefly covers how you can initiate these tests from your PC. If you encounter any problems with the guidelines in this section, refer to your control unit's operator guide for more information.

Types of 3270 Coax Ports

The coax-ports on an IBM 3270 Control Unit typically are one of three types. In all cases, ports, once configured, are dedicated to a specific device type. This means you cannot connect a printer to a terminal port and vice versa. The following device types are defined on a 3274 controller:

Display Terminal (Single session CUT)

- Model 2 - 24 x 80 (i.e. IBM 3178, 3278, 3279)
- Model 3 - 32 x 80
- Model 4 - 43 x 80
- Model 5 - 27 x 132

Distributed Function Terminal (Multi-Session DFT)

- 3290 Large screen Display
- 3270 Personal Computer

3287 Printer

Control Unit Tests

To run the control unit tests, your PC must be running the factory default CUT configuration of the 3270-PC Emulation Program. The tests can be run on either a CUT or DFT port. The examples given here are for an IBM 3274 61C.

Note: The IBM 3276 and 3174 support different test than those documented in this section. Also, non-IBM controllers may not support these test. Contact your system support personnel for additional assistance if required.

"/0" TEST - FIELD AND DATA TEST

To run this test, place the 3270 terminal in TEST mode by pressing the 3270 terminal function Alt/Test. Note that the 25th line on your display indicates "Test". If "Test" is not displayed, you are not in TEST mode with the control unit. Once in TEST mode, enter "/0" to start the test.

The test will result in the display of the following pattern where "pp" indicates the port number that you are using.

```
TEST: 3274.pp
?SEL PEN    SEL PEN
      &SEL PEN    >SEL PEN
      DISPLAY INSERT CK
```

"/3" TEST - DEVICE STATUS TABLE

To run this test, you must again be in 3270 TEST mode (press Alt/Test). Once in TEST mode enter "/3" to activate the Test. This test displays a summary of the control unit's Device Status Table with the format as shown on the following page.

0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5		
s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	s	Status
t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	Type
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	# Coax Errors
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	# Device Errors

Where "s" represents terminal status:

- 1 = terminal on
- 0 = terminal off
- X = port not configured
- _ = terminal shut down (error)

Where "t" represents terminal type:

- d = CUT type display terminal
- i = DFT type display terminal
- p = Printer
- _ = Terminal not connected or off

Where "c" represents coax errors:

- . = No errors
- : = 1 - 9 errors
- = 10 - 19 errors
- * = greater than 20 errors

Where "d" represents device errors as above under coax errors.

This test will vary between different models of IBM Control Units. The number of ports may change and additional lines other than the ones shown above may be included. The top line is the least significant digit of the port number.

This test, which can be performed from any terminal connected to the control unit, is useful to determine the status of your port. The test also indicates the number of coax and device errors that have occurred on a given port. This is useful for troubleshooting coax problems.

"/4" TEST - RESET DEVICE STATUS TABLE

To run this test you must first be in 3270 TEST mode (Alt/Test). Once in TEST mode, enter "/4" to activate the test. This test simply resets the Device Status Table displayed in test "/3" for your port only. Also note that several rows of zeros will be shown on your display.

"/b" TEST - CONTROL UNIT LOGICAL CONFIGURATION

To run this test you must first be in 3270 TEST mode (Alt/Test). Once in TEST mode, enter "/b" to activate the test. This test displays the logical configuration of the control unit.

A00	A01	Ann
s	s	s
a1	a1	a1
a2 - a2	a2 - a2	a2 - a2

Where "nn" represents the number of 3274 ports,

Where "s" represents the number of logical screens,

Where "a1" represents the primary LU address,

Where "a2" represents the range of secondary LU addresses (if any).

The primary use for this test is to determine if a given port is set up for CUT (only one logical screen) or DFT (more than one logical screen).

APPENDIX A

TROUBLESHOOTING

Introduction

This Appendix provides information about problems that may arise when installing or using the 3270 Coax Adapter.

PC Will Not Boot DOS and/or Power Up

This indicates one of three problems: The 3270 Coax Adapter is incorrectly installed, it conflicts with your PC I/O or Memory addresses, or it is defective. First try removing the 3270 Coax Adapter from your PC to verify that the problem is not caused by a PC related failure. Be sure the 3270 Coax Adapter is properly seated in a card edge connector, and that the board itself is not touching adjacent cards or shorting against the chassis.

If the problem continues, it is possible that the 3270 Coax Adapter I/O addresses or memory addresses conflict with another adapter in your PC. If possible, remove the suspected adapter. If this solves the problem, a conflict is confirmed and you will need to refer to Appendix B for information on how to disable certain I/O and memory addresses of the 3270 Coax Adapter.

Test Diagnostic Program Fails

First refer to Section 3 to ensure that you are properly running the diagnostic program. Then take the following steps to narrow down the problem area:

1. Run the Diagnostic Test in Stand-Alone mode with the coax disconnected from the 3270 Control Unit. If no failures are indicated, proceed to step 8.

2. If the test displays a failure message with no suggestions as to the possible cause (it will, however, indicate the area of the failure), proceed to step 12.
3. Does the test display the following message?

FAILURE - Instruction Memory Test

POSSIBLE CAUSES:

1. Adapter not installed correctly
2. Improper configuration (jumper) setting
3. Incorrect board installed
4. Board incompatible with user's system
5. Defective board

If this message is NOT displayed, proceed to step 7. If this message is displayed, verify that the 3270 (single board) adapter is properly installed in your system before proceeding.

4. Verify that the jumpers on the adapter are set for the "Both Enabled" jumper setting. See Appendix B for jumper settings. The "Both Enabled" jumper setting is required for the Test Program to run. Other jumper settings will cause error messages.
5. If the problem still exists, check to see if any other boards are installed in the system that may create a conflict with the 3270 Coax Adapter I/O and memory addresses. Examples of such boards are multi-function boards, communication boards, network boards, etc.

If a conflict with another board is suspected, remove the boards one at a time and run the Diagnostic Test again. If a conflicting board is found, refer to Appendix B. You may need to disable some of the 3270 Coax Adapter's I/O and memory addresses.

Note: If you change the jumper setting from "Both Enabled," the diagnostic test will not run. To verify if the board is operational, you will need to run the emulation software.

6. If none of the above solutions have solved the problem, the board is either incompatible with your particular PC, or it is defective. Proceed to step 13.
7. Does the diagnostic display the following message?

"3270 Adapter Board Not Configured Properly"

If this message is NOT displayed, proceed to step 8. If this message is displayed, proceed with steps 4 - 6.

8. Run the Diagnostic Test in the On-Line mode with the coax connected to an active 3270 Control Unit. Is the following message displayed?

FAILURE - Active Coax Verification

POSSIBLE CAUSES:

1. Coax disconnected or inactive
2. 3274/6 port incorrectly configured

If this message is NOT displayed, proceed to step 13.

9. This failure usually indicates a bad coax connection or a problem with the Control Unit. Verify that the coax is connected properly (see Section 2). Next, verify that it is connected to a properly configured 3274/6 port.
10. If possible, try the same coax on a standard IBM 3270 terminal to check that it is working properly. If this is not possible, try a different coax with the 3270 Coax Adapter (even if this requires moving the entire PC). Another option is to connect the other end of the coax to a known working port. Consult Section 4 for more information on control units and ports.
11. If the coax is known to be working, find out if a multiplexing device is being used between the control unit and the 3270 Coax Adapter. If so, try connecting the board directly to the control unit.
12. If the problem still exists, review the appropriate sections of this manual to double check that no errors have been made along the way. If all the procedures have been followed correctly, it is likely that the 3270 Coax Adapter is defective or some unusual circumstance is preventing the board from operating correctly.

13. If you have reached this point, the problem does not lend itself to further troubleshooting. Contact your manufacturer's representative.

Terminal and/or PC Does Not Operate

If the board passes the Attachmate Diagnostic Test, and problems are still encountered, the 3270 Coax Adapter is probably not at fault. Consult the user manual associated with the emulation software you are using. Follow any trouble-shooting guidelines provided.

Other Problems

The diagnostic tests provide possible causes to some failures. Check the areas indicated. If the problem still cannot be resolved, contact your Attachmate representative for assistance.

APPENDIX B

I/O AND MEMORY ADDRESSES

Introduction

The 3270 Coax Adapter responds to two ranges of PC I/O addresses and one range of PC memory addresses. Any one of the 3270 Coax Adapter's addresses can be modified to resolve address conflicts with other adapters installed in your PC. This section provides instructions for modifying PC I/O and memory addresses. Note that a conflict is an unusual condition.

DCA-IRMA I/O Address

To emulate the functional characteristics of the DCA-IRMA Board, the 3270 Coax Adapter acknowledges I/O addresses 220H-227H. These addresses are enabled with the factory default settings.

IBM 3278/79 Emulation Adapter

To emulate the functional characteristics of the IBM 3278/79 Emulation Adapter, the 3270 Coax Adapter acknowledges I/O addresses 2D0H-2D7H and memory addresses CE000-CEFFF. These addresses are enabled with the factory default settings.

Selective Address Enabling

Each of the I/O or memory addresses can be selectively enabled by changing one of two jumper blocks settings. The jumper blocks are located on the lower front end corner of the 3270 Coax Adapter board. (See Figure B-1 on page B-4 for further reference.)

If you enable IBM addresses only, the IRMA addresses will be disabled. If you enable IRMA addresses only, the IBM addresses will be disabled. Note that the factory default selection is "Both Enabled". The following sections of Appendix B cover address enabling in more detail.

Jumper Block E5 - I/O Addresses

This jumper block contains three positions used to select the desired I/O addresses for IRMA only (labeled R), IBM only (labeled B) or Both Enabled (labeled X). The position of the movable plastic jumper on the jumper block determines the option. (For reference, see Figure B-1 on the page B-4.)

BOTH ENABLED (Labeled X)

This jumper position, which is the factory default, indicates both IBM and IRMA I/O addresses are enabled. You will find the movable plastic jumper in the "Both Enabled" setting when you receive the 3270 Coax Adapter from the factory. (See Figure B-1 on page B-4 for reference.)

IRMA ONLY (Labeled R)

This jumper position indicates that only IRMA addresses 220H-227H are enabled and IBM addresses are disabled. Note that *EXTRA!* Connectivity Software, when used with the 3270 Coax Adapter, uses the IBM addresses as its primary method of communication with the 3270 Coax Adapter. With these IBM addresses disabled, you must tell the program you have a DCA-IRMA board instead of an 3270 Coax Adapter during customization. Also note that this position does not allow the Attachmate Diagnostic Test to operate. (See Figure B-1 on page B-4 for reference.)

IBM ONLY (LABELED B)

This jumper position indicates that only the IBM 3278/9 Emulation Adapter I/O addresses 2D0H-2D7 are enabled and that the IRMA addresses are disabled. When you choose this jumper setting, you will also need to enable the IBM memory addresses. See "Jumper Block E6 - Memory Addresses" below for more information. (Also see Figure B-1 on page B-4 for reference.)

Jumper Block E6 - Memory Addresses

This block contains two jumper settings used to enable or disable the IBM memory addresses (CE000H- CEFFFFH). A movable plastic jumper is used to select the desired option.

Note: Jumper block E6, located next to E5, is not labeled on the circuit board. See Figure B-1 on page B-4 for reference.

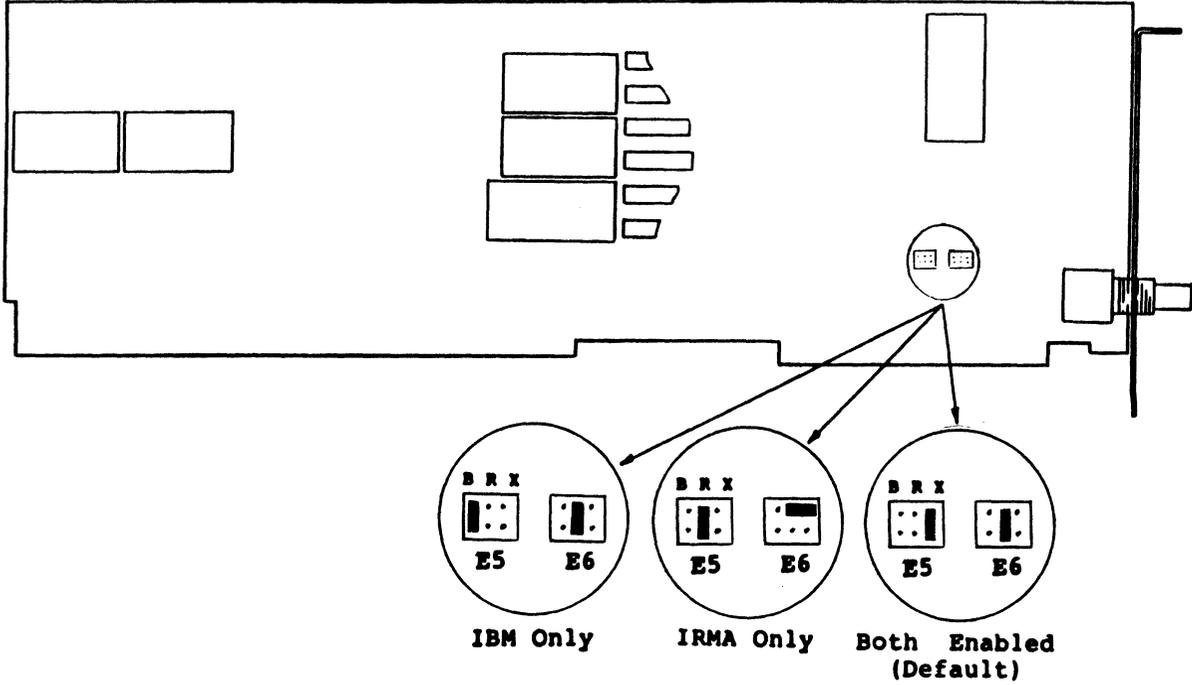
IBM MEMORY ENABLED (BOTH ENABLED)

This position enables the IBM memory addresses CE000-CEFFFF. It is the factory default position and is required if "IBM Only" or "Both Enabled" jumper settings are selected in the I/O address block. (See Figure B-1 on page B-4 for reference.)

IBM MEMORY DISABLED (IRMA ONLY)

This position disables the IBM memory addresses CE000-CEFFFF. It should not be used if "IBM Only" or "Both Enabled" jumper settings are selected in the I/O address block. Note that this position does not allow the the Diagnostic Test to operate. (See Figure B-1 on page B-4 for reference.)

Figure: B-1



APPENDIX C

3270 COAX ADAPTER SPECIFICATIONS

Physical Specifications

The 3270 Coax Adapter is designed to meet the I/O expansion bus specification of the IBM PC models - PC/XT/AT, System/2 Model 30 or IBM compatibles, and is therefore, compatible with these models.

The 3270 Coax Adapter interfaces an IBM PC or compatible with an existing IBM 3270 Type-2 Coaxial Network and associated Control Unit. It transmits serially using a binary dipulse technique at 2.3587 MHz, as defined by 3270 coax type-2 protocol. Up to 1500 meters (5000 feet) of RG-62AU type coaxial cable, or 1000 feet of Twisted Pair cable with suitable baluns, may be connected to the 3270 Coax Adapter via a standard BNC bayonet connector.

Size

Overall adapter dimensions are: 14"x 4.8"x 0.75", including bracket flanges and connector extension. Critical slot dimensions are: 13.35"x 4.1"x 0.65".

Weight

Adapter weight does not exceed 16 ounces; shipping weight is less than 2 pounds.

PC I/O Channel Specifications

The 3270, utilizing only the 62 pin Expansion Slot Connector, meets the specifications for the PC/XT, compatibles, and IBM PS/2 Model 30.

Utilized I/O Addresses

Two sets of I/O addresses are recognized by the 3270 Coax Adapter. While in the IBM only mode, addresses 2D0-2D7 Hex are applicable; while in the IRMA only mode, addresses 220-227 Hex are utilized. If BOTH ENABLED is selected, both ranges of addresses will be acknowledged.

Utilized Memory

While selected, 4K of shared memory is located at CE000-CEFFF. This is used only while in the BOTH ENABLED or IBM ONLY mode.

Expansion Slot Loading

The 3270 Coax Adapter does not load any of the utilized pins of the I/O Channel with more than two LSTTL loads. The 36 pin AT expansion bus connector is not used.

Electrical Specifications

The 3270 Coax Adapter is powered by the 62 pin PC system I/O channel, utilizing only +/- 5 volts.

Power Requirements

A total of 9.5 watts is typically required for operation (1.8A +/-0.2A @ +5V, 100mA +/-50mA @ -5V).

Environmental Specifications

PC Materials

The PC board has been constructed of UL 94V1 flame and fungus resistant material purchased from a UL listed vendor.

Operating Temperature and Humidity

Room Temperature: 10 to 35 degrees Celsius

Humidity: 5 to 80 percent (non-condensing)

The actual temperature of the board should not exceed 55 degrees Celsius when operating inside the PC.

Attachmate Corporation
3241-118th S.E.
Bellevue, WA 98005
(206) 644-4010